NOLAN WAGENER

Email: nolan.wagener@gmail.com Website: nolanwagener.github.io

Research Interests

Machine learning for robotics, reinforcement learning, model predictive control

Education

Georgia Institute of Technology 2015–2023
PhD, Robotics
School of Interactive Computing
Advisors: Byron Boots and Panagiotis Tsiotras

University of California, Berkeley 2010–2014
BS, Electrical Engineering and Computer Science
BS, Mechanical Engineering

Employment

Overland AI April 2024 – Present
Senior Software Engineer

University of Washington September 2021 – December 2023
Research Scientist
Paul G. Allen School of Computer Science & Engineering
Led development of the control stack for the DARPA RACER project

Microsoft Research May 2021 – August 2021
Reinforcement Learning Research Intern
Mentors: Matthew Hausknecht and Ching-An Cheng
Studied use of GPT transformers for human motion completion in MuJoCo physics simulator

Awards and Honors

NeurIPS Scholar Award	2022
NeurIPS Top Reviewer	2022
NeurIPS Datasets and Benchmarks Track Outstanding Reviewer	2022
RSS Best Student Paper Award	2019
RSS Best Systems Paper Award, Finalist	2019
ICRA Best Conference Paper Award, Finalist	2017
NSF Graduate Research Fellowship	2015–2020
ICRA Best Robotic Manipulation Paper Award	2015
UC Berkeley Mechanical Engineering Department Citation, Honorable Mention	2014

Publications

Refereed

[1] Zhengyao Jiang*, Yingchen Xu*, Nolan Wagener, Yicheng Luo, Michael Janner, Edward Grefenstette, Tim Rocktäschel, Yuandong Tian. **H-GAP: Humanoid Control with a Generalist Planner**. International Conference on Learning Representations (ICLR), 2024. **Spotlight Presentation**

[2] Xiangyun Meng, Nathan Hatch, Alexander Lambert, Anqi Li, Nolan Wagener, Matthew Schmittle, JoonHo Lee, Wentao Yuan, Zoey Chen, Samuel Deng, Greg Okopal, Dieter Fox, Byron Boots, Amirreza Shaban. **TerrainNet: Visual Modeling of Complex Terrain for High-Speed, Off-Road Navigation**. Robotics: Science and Systems (RSS), 2023.

[3] Nolan Wagener, Andrey Kolobov, Felipe Vieira Frujeri, Ricky Loynd, Ching-An Cheng, Matthew Hausknecht. **MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control**. Neural Information Processing Systems (NeurIPS), 2022.

[4] Nolan Wagener, Byron Boots, Ching-An Cheng. **Safe Reinforcement Learning Using Advantage-Based Intervention**. International Conference on Machine Learning (ICML), 2021.

[5] Adam Foris, Nolan Wagener, Byron Boots, Anirban Mazumdar. **Exploiting Singular Configurations for Controllable, Low-Power Friction Enhancement on Unmanned Ground Vehicles**. IEEE Robotics and Automation Letters (RA-L), 2020.

[6] Nolan Wagener*, Ching-An Cheng*, Jacob Sacks, Byron Boots. **An Online Learning Approach to Model Predictive Control**. Robotics: Science and Systems (RSS), 2019. **Winner of Best Student Paper Award, Finalist for Best Systems Paper Award**

[7] Ching-An Cheng, Xinyan Yan, Nolan Wagener, Byron Boots. **Fast Policy Learning Through Imitation and Reinforcement**. Uncertainty in Artificial Intelligence (UAI), 2018. **Plenary Presentation**

[8] Grady Williams, Nolan Wagener, Brian Goldfain, Paul Drews, James Rehg, Byron Boots, Evangelos Theodorou. **Information Theoretic MPC for Model-Based Reinforcement Learning**. IEEE International Conference on Robotics and Automation (ICRA), 2017. **Finalist for Best Conference Paper Award**

[9] Sergey Levine, Nolan Wagener, Pieter Abbeel. **Learning Contact-Rich Manipulation Skills with Guided Policy Search**. IEEE International Conference on Robotics and Automation (ICRA), 2015. **Winner of Best Robotic Manipulation Paper Award**

Non-Refereed

[1] Matthew Hausknecht, Nolan Wagener. **Consistent Dropout for Policy Gradient Reinforcement Learning**. 2022.

Thesis

[1] Nolan Wagener. **Machine Learning for Agile Robotic Control**. Georgia Institute of Technology, 2023.

Invited Talks

"TerrainNet: Visual Modeling of Complex Terrain for High-Speed, Off-Road Navigation", RSS Talk, 2023
"MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control", NeurIPS Virtual Talk, 2022
"MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control", University of Toronto AI in Robotics Seminar, 2022
"Model Predictive Control for Aggressive Off-Road Driving", University of Washington EE P 545 (The Self Driving Car: Intro to AI for Mobile Robots) Invited Lecture, 2021
"Safe Reinforcement Learning Using Advantage-Based Intervention", Microsoft Research Summit, 2021
"Safe Reinforcement Learning Using Advantage-Based Intervention", ICML Virtual Talk, 2021
"An Online Learning Approach to Model Predictive Control", RSS Talk, 2019

Service

Reviewer for RSS, ICRA, IROS, ICML, NeurIPS, IEEE RA-L, Artificial Intelligence

Teaching Experience

Teaching Assistant for CS 3600 (Artificial Intelligence), Georgia Tech 2020
Teaching Assistant for CS 8803 ACRL (Adaptive Control and Reinforcement Learning), Georgia Tech 2019
Teaching Assistant for CS 4641 (Machine Learning), Georgia Tech 2018

Skills

Programming Languages Python, C++, MATLAB
Libraries PyTorch, Isaac Gym, MuJoCo, PyBullet, `dm_control`, ROS

Citizenship

United States, Canada